In vitro human experimental model for pancreatic acinar dedifferentiation

Commonly used acronym: *In vitro human ADM culture model*
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SCOPE OF THE METHOD

The Method relates to	Animal health, Human health
The Method is situated in	Basic Research
Type of method	In vitro - Ex vivo
This method makes use of	Human derived cells / tissues / organs
Species from which cells/tissues/organs are derived	Human
Specify the type of cells/tissues/organs	Pancreatic exocrine cells

DESCRIPTION

Method keywords

acinar dedifferentiation

acinar-to-ductal metaplasia

Scientific area keywords

pancreatic cancer

Method description

Loss of acinar differentiation drives pancreatic cancer. An established human in vitro experimental model is used in our lab to study this process. Pancreatic exocrine cells from human donors are placed in suspension culture in Advanced RPMI medium supplemented with 5% heat-inactivated fetal bovine serum, and undergo stress due to isolation, which causes the acinar cells to lose their typical characteristics and eventually transdifferentiate into ductal-like cells. This enables us to study the process of acinar dedifferentiation without the use of any in vivo model. If exocrine cells are placed in monolayer culture, they acquire a ductal-like phenotype, while in suspension culture they acquire a more progenitor-like phenotype with an activation of a senescence program.

Lab equipment

No special lab equipment is needed except for suspension culture plates.

Method status

Published in peer reviewed journal

PROS, CONS & FUTURE POTENTIAL

Advantages

The experimental model provides excellent foundation to study the first step in

pancreatic cancer formation.

Challenges

Primary pancreatic exocrine cells grow in spheroid-like structures, which makes it hard to dissociate and manipulate. They are very sensitive to stress and a high rate of cell death can be observed the first days after seeding. Daily culture medium refreshments are needed to have a healthy culture.

REFERENCES, ASSOCIATED DOCUMENTS AND OTHER INFORMATION

References

Baldan et al., 2019 (Sci Rep) Mfopou JK et al., 2016 (Biosci Rep) Houbracken et al., 2012 (BMC Biotechnol.) Houbracken et al., 2011 (Gastroenterology)

Associated documents

PARTNERS AND COLLABORATIONS

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